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SPECIFICATION FOR MILD STEEL WIRE ROD FOR THE MANUFACTURE OF MACHINE SCREWS (BY COLD HEADING PROCESS)

(Second Revision)

(Incorporating Amendment No. 1)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Price Group 2

Indian Standard

SPECIFICATION FOR MILD STEEL WIRE ROD FOR THE MANUFACTURE OF MACHINE SCREWS (BY COLD HEADING PROCESS)

(Second Revision)

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Indian Standard
SPECIFICATION FOR MILD STEEL WIRE ROD FOR THE MANUFACTURE OF MACHINE SCREWS (BY COLD HEADING PROCESS)
(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 25 October 1977, after the draft finalized by the Wrought Steel Products Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was prepared on the recommendation of the Tariff Commission contained in its report on continuance of protection to the machine screw industry (1957).

0.3 This standard was first published in 1962 and was revised in 1969. On the basis of the experience gained during these years, it has now been found necessary to revise this standard to align it with IS : 1673-1973*.

0.4 This edition 3.1 incorporates Amendment No. 1 (January 1993). Side bar indicates modification of the text as the result of incorporation of the amendment.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for mild steel wire rod for the manufacture of wire conforming to IS : 1673-1973* for manufacture of machine screws or threaded fasteners.

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*Specification for mild steel wire for the manufacture of machine screws (by cold heading process) (*first revision*).

†Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, definitions given in IS : 1956 (Part V)-1976* shall apply.

3. SUPPLY OF MATERIAL

3.1 General requirements relating to the supply of material shall be as laid down in IS : 1387-1967†.

4. MANUFACTURE

4.1 The steel for wire rod shall be manufactured by open-hearth, electric, basic oxygen or a combination of these processes. In case any other process is employed by the manufacturer, prior approval of the purchaser should be obtained. If basic oxygen process is employed for manufacture, the nitrogen content of steel shall not exceed 0.007 percent.

NOTE — The nitrogen content shall be ensured by the manufacturer by occasional product analysis.

4.2 Steel may be supplied in semi-killed, killed or rimming condition as specified at the time of enquiry and order.

5. CHEMICAL COMPOSITION

5.1 The ladle analysis of the material when analyzed in accordance with the relevant part of IS : 228‡ shall be as given below:

Constituent	*Percent*
Carbon, *Max*	0.20
Manganese	0.30 to 0.60
Phosphorus, *Max*	0.055
Sulphur, *Max*	0.055

5.2 Product Analysis — The permissible variation in case of product analysis from the limit specified in **5.1** shall be as follows:

Constituent	*Permissible Variation*
Carbon	+ 0.02
Manganese	± 0.04
Phosphorus	+ 0.005
Sulphur	+ 0.005

NOTE — Variations shall not be applicable both over and under the specified limits in several determinations in a heat.

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*Glossary of terms relating to iron and steel: Part V Bright steel bar and steel wire (*first revision*).

†General requirements for the supply of metallurgical materials (*first revision*).

‡Methods for chemical analysis of steels (*second revision*) (being issued in parts).

6. CONDITION OF MATERIAL ON DELIVERY

6.1 Wire rod shall be delivered in straight lengths or in coils.

6.1.1 Wire rod shall be delivered in as-rolled or annealed condition as specified by the purchaser.

7. SIZES AND TOLERANCES

7.1 Wire rod shall be supplied to the nominal sizes specified by the purchaser, with the following tolerances:

Diameter	*Size Tolerance*	*Out of Roundness, Max*
mm	mm	mm
5.5 to 14.0	± 0.50	0.65
Over 14.0 to 20.0	± 0.60	0.80
Over 20.0	± 0.80	1.20

8. FREEDOM FROM DEFECTS

8.1 The finished material shall be free from such surface defects and internal flaws as would be detrimental to the end use of the material. These defects, however, will be ignored in the one metre length of coil from both ends.

9. SAMPLING

9.1 Unless agreed otherwise, the method of drawing representative samples of material and the criteria for conformity shall be as prescribed in Appendix A.

10. PACKING

10.1 Each coil or bundle of wire rods shall be bound or fastened compactly.

11. MARKING

11.1 Each coil or bundle of wire rods shall be legibly marked with the following:

a) Size of the wire rod,

b) Mass of the coil or bundle,

c) Date of manufacture, and

d) Trade-mark or name of the manufacturer.

11.1.1 The material may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

APPENDIX A

(*Clause* 9.1)

SAMPLING AND CRITERIA FOR CONFORMITY

A-1. LOT

A-1.1 In any consignment, all the bundles or coils of wire rods of the same grade and diameter manufactured under essentially similar conditions of manufacture, shall be grouped together to constitute a lot.

A-1.1.1 Samples shall be taken from each lot and tested for conformity to the standard.

A-2. SAMPLING

A-2.1 The number of bundles or coils to be taken from a lot shall be according to col 1 and 2 of Table 1. These samples shall be taken at random by using random number tables (*see* IS : 4905-1968*).

TABLE 1 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVES

NO. OF BUNDLES OR COILS IN A LOT (1)	NO. OF BUNDLES OR COILS FOR PHYSICAL REQUIREMENTS (2)	PERMISSIBLE NO. OF DEFECTIVES (3)	NO. OF TESTS FOR CHEMICAL REQUIREMENTS (4)
Up to 25	8	0	2
26 „ 50	13	1	3
51 „ 150	20	2	5
151 „ 300	32	3	8
301 and above	50	5	8

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*Methods for random sampling.

A-3. PREPARATION OF SAMPLES AND NUMBER OF TESTS

A-3.1 Tests for Physical Requirements — From the bundles or coils selected according to col 1 and 2 of Table 1, adequate length of test piece shall be cut from the each end and subjected to physical tests, namely, size and surface condition. A test piece failing to meet any one of the requirements, shall be called a defective. If the number of defectives found is less than the number of permissible number of defectives specified in col 3 of Table 1, the lot shall be considered to have conformed to physical requirements otherwise not.

A-3.2 Tests for Chemical Requirement — Unless otherwise agreed the following procedure shall be followed for chemical requirements:

> From those test pieces which have conformed to physical requirements, further test pieces shall be selected at random according to col 4 of Table 1. These samples shall be tested for all the chemical requirements. If a test piece fails to meet the respective chemical requirement, it shall be called a defective. The lot shall be considered to have conformed to the chemical requirements if all the individual test pieces tested for chemical requirements pass the test, otherwise not.

A-4. CRITERIA FOR CONFORMITY

A-4.1 A lot shall be considered to have conformed to the requirements of the specification if **A-3.1** and **A-3.2** are satisfied.

INDIAN STANDARDS ON STEEL WIRE AND WIRE RODS

IS	
279-1972	Galvanized steel wire for telegraph and telephone purposes (*second revision*)
280-1972	Mild steel wire for general engineering purposes (*second revision*)
1673-1973	Mild steel wire for the manufacture of machine screws (by cold heading process) (*first revision*)
1812 1973	Carbon steel wire for the manufacture of wood screws (*first revision*)
1835-1976	Steel wire for ropes (*third revision*)
2255-1977	Mild steel wire rod for the manufacture of machine screws (by cold heading process) (*second revision*)
2589-1975	Hard drawn steel wire for upholstery springs (*first revision*)
3835-1966	Aluminium steel core wire for aluminium conductors (ACSR)
4223-1975	Steel wire for umbrella ribs (*first revision*)
4224-1972	Steel wire for staples, pins and clips (*first revision*)
4454	Steel wire for cold formed springs
(Part I)-1975	Patented and cold drawn steel wire — unalloyed (*first revision*)
(Part II)-1975	Oil hardened and tempered spring steel wire and valve spring wire — unalloyed (*first revision*)
(Part III)-1975	Oil hardened and tempered steel wire, alloyed (*first revision*)
(Part IV)-1975	Stainless spring steel wire for normal corrosion resistance (*first revision*)
4824-1973	Bead wire for tyre (*first revision*)
5239-1969	Wire rod for the manufacture of aluminized steel core wire for aluminium conductors
5993-1970	Aluminized steel wire for telegraph and telephone purposes
6902-1973	Steel wire for spokes
7557-1974	Steel wire (up to 20 mm dia) for the manufacture of cold forged rivets
7887-1975	Mild steel wire rods for general engineering purposes
7904-1975	Carbon steel wire rods
8510	Tinned steel wire for banding of armatures and rotors
(Part I)-1977	General requirements
(Part II)-1977	Specific requirements for magnetic banding wires
(Part III) 1977	Specific requirements for non-magnetic banding wires
8563-1977	Half round mild steel wires for the manufacture of split pins
8564-1977	Steel wire for nipples for spokes
8565-1977	Heald wire
8566-1977	Steel wire for reeds

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Amendments Issued Since Publication

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